PATENT

Attorney Docket No. 22700-704

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application	PATENT-APPLICATION	⊘ ≣
Inventor(s): Santasiero et al.	#6	
Application No.: Not Yet Assigned	Art Unit: Not Yet Assigned	ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ
Filed: Herewith	Examiner: Not Yet Assigned	
Title METHOD FOR SCREENING MICROCRYSTALLIZATIONS FOR CRYSTAL FORMATION		

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Commissioner for Patents Washington, D.C. 20231

Sir:

Listed below or on an attached Form PTO-1449 is information known to applicant(s). A copy of each listed publication and U.S. and foreign patent, except for pending U.S. applications, can be found in prior U.S. Patent Application No.: 09/851,397: May 7, 2001, along with a concise explanation of information in a foreign language, if any, pursuant to 37 C.F.R. §1.97-1.98.

1.98(d) A copy of any patent, publication or other information listed in an information disclosure statement is not required to be provided if it was previously cited by or submitted to the office in a prior application, provided that the prior application is properly identified in the statement and relied upon for an earlier filing date under 35 U.S.C. 120.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. If form PTO-1449 is enclosed, the Examiner is requested to initial and return it in accordance with MPEP §609.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, material to patentability as defined in §1.56.

C:\NrPortbl\PALIB1\AG2\1411620_1.DOC Attorney Docket No.: 22700-704

\boxtimes	This s	tatemen	t qualifies under 37 C.F.R. §	1.97, subsection (b) because (check all that apply):
	\boxtimes	(1)	It is being filed within 3 mc a continued prosecution app	onths of the application filing date and is other than olication under § 1.53(d)
		(2)		onths of entry of a national stage
		(3)		nail date of the first Office Action on the merits
		(4)		nailing of a first Office Action after the filing of a mation under § 1.114.
	the filination a first	ing date al stage Office a	of a national application; (2) as set forth in §1.491 in an in	ng filed after the latest of: (1) three months beyond three months beyond the date of entry of the international application; or (3) the mailing date of the mailing date of the earlier of a final office on under §1.311, then:
		a certif	ication as specified in §1.97	(e) is provided below; or
		a fee or with th	f \$180.00 as set forth in §1.1 e payment of other papers fi	7(p) is authorized below, enclosed, or included led together with this statement.
	final o	F.R. §1.9 ffice act ue fee, the	ion under §1.113 or a notice	ng filed after the mailing date of the earlier of a of allowance under §1.311, but before payment of
	A.	a certif	ication as specified in §1.97((e) is completed below; and
	B.	a petition	on under 37 C.F.R. §1.97(d) ted herewith; and	requesting consideration of this statement is
	C.	a fee of with the	f \$130.00 as set forth in \$1.1 e payment of other papers fil	7(i)(1) is authorized below, enclosed, or included ed together with this statement.
\boxtimes	fees of	\$0.00 a	nd charge any additional fee	ereby authorized to charge the above-referenced s or credit any overpayment associated with this -2415 (Docket No. 22700-730).
				Respectfully submitted,
				WILSON SONSINI GOODRICH & ROSATI
Dated:	0	ec 2	1,2001	By: Oavid Julet
Palo Al (650)49	ge Mill Ito, CA 93-9300 ner No.	94304-1)	1505	David J. Wellz, Reg. No. 38,362

C:\NrPortbl\PALIB1\AG2\1411620_1.DOC Attorney Docket No.: 22700-704

SHEET 1 OF 6

	****					CELIO	1 0
INFORMATION DISCLOSURE CITATION PTO-1449		ATTY. DOCKET NO.	SI	ERIAL NO.		CJ=	
		22700-730 Not Yet Assigned 2		2%			
		APPLICANT Santasiero	et al.			7 2.	
		FILING DATE 12/21/01	Gi	ROUP Unassig		۳	
		U.	S. PATENT DOCUMENTS	 S		<u>.</u> <u></u>	
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILIN	G DATI
	4,833,233	5-23-89	Carter	530	363	8-20-8	7
	6,057,159	5-2-00	Lepre	436	86	12-12-	97
	4,263,010	4-21-81	Randolph	23	230 A	10-31-	79
	4,668,584	5-26-87	Uzgiris et al.	428	408	12-23-	85
	4,755,363	7-5-88	Fujita et al.	422	245	10-29-	86
	4,886,646	12-12-89	Carter et al.	422	245	3-23-8	8
	4,919,899	4-24-90	Herrmann et al.	422	245	2-29-8	8
	5,078,975	1-7-92	Rhodes et al.	422	253	12-18-	90
	5,096,676	3-17-92	McPherson et al.	422	245	8-2-90	
	5,419,278	5-30-95	Carter	117	206	5-25-9	4
	5,641,681	6-24-97	Carter	436	4	4-17-9	5
	5,643,540	7-1-97	Carter et al.	422	245.1	2-27-9	5
	5,872,010	2-16-99	Karger et al.	436	173	7-3-96	
	5,096,676	3-17-92	McPherson et al.	422	245	8-2-90	
	5,221,410	6-22-93	Kushner et al.	156	600	10-9-9	1
	5,873,394	2-23-99	Meltzer	141	130	9-18-9	7
	6,039,804	3-00	Kim et al.	117	206		
· · · · · · · · · · · · · · · · · · ·	<u> </u>	FOR	_ EIGN PATENT DOCUMENT	 ΓS			
EXAMINER'S	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANS	LATION
INITIALS						YES	NO
	WO 00/60345	12/10/00	PCT	G01N	31/00		
	0 553 539 A1	04/08/93	Europe	C30B	7/00		
XAMINER			DATE CONSIDERED				-

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

C:\NrPortbl\PALIB1\AG2\1411620_1.DOC Attorney Docket No.: 22700-704

				
INFORMATION DISCLOSURE	ATTY. DOCKET NO.	SERIAL NO.		
CITATION	22700-730	Not Yet Assigned		
PTO-1449	APPLICANT Santasiero et al.			
	FILING DATE 12/21/01	GROUP Unassigned		
OTHER DOCUMENTS	(Including Author, Title, Date, F	Pertinent Pages, Etc.)		
	cal Experimental Design Techniqu GROWTH 196, pp. 665-673	es for Automatic and Manual Protein		
	rison of Microbatch And Vapor Di CRYSTAL GROWTH 168; pp. 1			
Cudney, B. et al., "Screening CRYSTALLOGR D50, pp. 4	Cudney, B. et al., "Screening and Optimization Strategies For Macromolecular Crystal Growth", ACTA CRYSTALLOGR D50, pp. 414-423			
McPherson, A., "Two Appro- GROWTH 122; pp. 161-167	McPherson, A., "Two Approaches to the Rapid Screening of Crystallization Conditions" J CRYSTAL GROWTH 122; pp. 161-167			
Ward, K.B. et al., "Automating Proteins: a Practical Approact 310.	Ward, K.B. et al., "Automating Crystallization Experimients. In: Crystallization of Nucleic Acids and Proteins: a Practical Approach" eds. A. Ducruix & R. Giege, Oxford University Press, New York; pp. 291-310.			
Weber, P.C., "Overview of P. (1997)	Weber, P.C., "Overview of Protein Crystallization Methods" METHODS ENZYMOL, 276, pp. 13-22 (1997)			
McPherson, A. "Crystallization of Biological Marcromolecules" COLD SPRING HARBOR LABORATORY PRESS; (1999)				
McPherson, A. "Crystallization of Macromolecules: general principals" METHODS ENZYMOL, 114; pp. 112-120 (1985)				
	McPherson, A. "Use of Polyethylene Glycol in the Crystallization of Macromolecules" METHODS ENZYMOL; 114; pp. 120-125 (1985)			
McPherson, A. "Crystallization 114; pp. 125-127	McPherson, A. "Crystallization of Proteins by Variation of pH or Temperature", METHODS ENZYMOL, 114; pp. 125-127			
Jancarik, J. et al., "Sparse Matrix Sampling: A Screening Method For Crystallization of Proteins", J. APPL CRYST. 24; pp. 409-411 (1991)				
XAMINER	DATE CONSIDERED			

 $C:\NrPortbl\PALIB1\AG2\1411620_1.DOC\\ Attorney\ Docket\ No.:\ 22700-704$

			SHEET 3 OF C	
INFORMATION DISCLOSURE CITATION PTO-1449		ATTY. DOCKET NO.	SERIAL NO.	
		22700-730	Not Yet Assigned	
		APPLICANT Santasiero et al.		
		FILING DATE 12/21/01	GROUP Unassigned	
	OTHER DOCUMENTS (Including Author, Title, Date, Pertino	ent Pages, Etc.)	
		ical Macromolecule Crystallization Dat for Protein Crystal Growth Data" ACTA		
		crocrystals and the Design of a Micro-Dia; ACTA CRYSTALLOGR D55; pp. 1		
	Pebay-Peyroula, R. et al., "X-I Grown Lipidic Cubic Phases"	ray Structure of Bacteriorhodopsin at 2. SCIENCE 277; pp. 1676-1681	5 Angstroms from Microcrystals	
	Sibille, L., Clunie, J.C., Baird, J.K. Solvent evaporation rates in the closed capillary vapor diffusion method of protein crystal growth. <i>J. Cryst. Growth</i> 110, 80–88 (1991).			
	Montelione, G, Anderson, S: Structural genomics: keystone for a human proteome project. <i>Nature Struct Biol</i> (1999) 6(1):1112.			
	Burley, SK, Almo, SC, Bonanno, JB, Capel, M, Chance, MR, Gaasterland, T, Lin, D, Sali, A, Studier, FW, Swaminathan, S: Structural genomics: beyond the Human Genome Project. <i>Nature Genet</i> (1999) 23:151157.			
	Gaasterland, T: Structural genomics: Bioinformatics in the driver's seat. <i>Nature Biotechnol</i> (1998) 16:625-627.			
	Rost, B: Marrying structure and genomics. Structure (1998) 6:259263.			
	Shapiro, L, Lima, CD: The Argonne Structural Genomics Workshop: Lamaze class for the birth of a new science. Structure (1998) 6:265267.			
	Ducruix, A, Giege, R (Eds): C edition. Oxford: Oxford University	rystallization of nucleic acids and protersity Press; (1999).	ins. A practical approach. Second	
		ins - a rational approach? Acta Crystall		
	Stura, EA, Satterthwait, AC, (1994) 50:448455.	Calvo, JC, Kaslow, DC, Wilson, IA: R	Reverse screening. Acta Crystallogr D	
	Hampton Research http://www.hamptonresearch.c	Homepage on World	Wide Web at URL:	
	Emerald BioStructures Homepage on World Wide Web at URL: http://www.emeraldbiostructures.com			
	Carter, C, Jr: Efficient factoria Methods (1990) 1(1):1224	l designs and the analysis of macromole	ecular crystal growth conditions.	
		lization experiments and protocols. <i>Cry</i> . Ducruix, A, Giege, R, (Eds): New York		
EXAMINER	-	DATE CONSIDERED		
LAAMINER		DATE CONSIDERED		

		SHEET 4 OF 6	
INFORMATION DISCLOSURE	ATTY. DOCKET NO.	SERIAL NO.	
CITATION	22700-730	Not Yet Assigned	
PTO-1449	APPLICANT Santasiero et al.		
	FILING DATE 12/21/01	GROUP Unassigned	
OTHER DOCUMENTS	Including Author, Title, Date, Pertin	ent Pages, Etc.)	
automated protein crystalliza 43(Supplement): C275.	tion using the new ACA vapor diffus	n, DK: Apocalypse now: update on sion plate. Acta Crystallogr A (1987)	
A good introduction to the ap the Web Site of Douglas microbatch for large scale cry Cyberlabs Homepage on First commercially available	Douglas Instruments Homepage on World Wide Web at URL: http://www.douglas.co.uk/home.htm A good introduction to the application of the microbatch technique for high-throughput work is available the Web Site of Douglas Instruments [URL: http://www.douglas.co.uk/proposal.htm - The use microbatch for large scale crystallization projects]. Cyberlabs Homepage on World Wide Web at URL: http://www.gilson.com/cyberprd.ht First commercially available robotics system for protein crystal growth. The Cyberlabs instrument h undergone revisions over the years. They are now addressing the need to create imaging stations for protein crystal analysis.		
Baird, JK: Theory of protein of <i>Growth</i> (1999) 204 :553562	Baird, JK: Theory of protein crystal nucleation and growth controlled by solvent evaporation. J Cryst		
Bullock, E. and E.C. Pyatt, Ap E. 1972. 412-13.	Bullock, E. and E.C. Pyatt, Apparatus for the growth of crystals from small volumes of solution, in J. Phys. E. 1972. 412-13.		
Luft, J.R., D.M. Rak, and G.T Cryst. Growth. 1999. 450-455	Luft, J.R., D.M. Rak, and G.T. DeTitta, Microbatch macromolecular crystallization in micropipettes, in J. Cryst. Growth. 1999. 450-455.		
Pusey, M. and R. Naumann, C. 593-9.	Pusey, M. and R. Naumann, Growth kinetics of tetragonal lysozyme crystals, in J. Cryst. Growth. 1986. 593-9.		
Reshetnyak, I.I., Effect of ultra 1975. 99-103.	Reshetnyak, I.I., Effect of ultrasound on crystallization kinetics in small volumes of solutions, in Akust. Zh. 1975. 99-103.		
microanalysis of small fluid sa	Rippon, G.D., A. Patak, and A.T. Marshall, Improved microdroplet method for quantitative x-ray microanalysis of small fluid samples, in Micron. 1993. 17-21.		
Electron. Lett. 1999. 90-91.			
crystals by means of equilibriu	Zeppezauer, M., H. Eklund, and E.S. Zeppezauer, Micro diffusion cells for the growth of single protein crystals by means of equilibrium dialysis, in Arch. Biochem. Biophys. 1968. 564-73.		
	Chayen, N.E., Shaw Stewart, P.D., Blow, D.M.: Microbatch crystallization under oil - a new technique allowing many small-volume crystallization trials. J Crystal Growth (1992) 122:176-180.		
Chayen, N.E., Shaw Stewart, P.D., Baldock, P.: New developments of the IMPAX small-volume automated crystallization system. Acta Cryst (1994) D50:456-458.			
amidase operon of Pseudomon	Wilson, S.A., et al.: Crystallization of and preliminary X-ray data for the negative regulator (AmiC) of the amidase operon of Pseudomonas aeruginosa. J Mol Biol (1991), 222: 869-871.		
Varadarajan, R. and F.M. Ric substitution at position 13: pac	Varadarajan, R. and F.M. Richards: Crystallographic structures of ribonuclease S variants with nonpol substitution at position 13: packing and cavities. Biochemistry (1992), 31: 12315-12327.		
EXAMINER	DATE CONSIDERED		

 $C:\label{lem:control} C:\label{lem:control} C:\label{lem:control} PALIB1\actual AG2\actual 1620_1.DOC$

Attorney Docket No.: 22700-704

EXAMINER	•	DATE CONSIDERED	
	Chayen, N. et al., "An Automated System for Micro-Batch Protein Crystallization and Screening", J. Appl. Cryst., Vol. 23 (1990), pp. 297-302.		
	Cox, M. J. et al., "An Investigation of Protein Crystallization Parameters Using Successive Automated Grid Searches (SAGS)", <i>Journal of Crystal Growth</i> , Vol. 90, Nos. 1-3, July 1988, pp. 318-324.		
	Pusey, M.L. et al., "Protein Crystal Growth" GROWTH KINETICS FOR TETRAGONAL LYSOZYME CRYSTALS, 261; pp. 6524-6529		
~~~	Diller, D.J., Hol, W.G.J. An accurate numerical model for calculating the equilibration rate of a hanging-drop experiment. <i>Acta Crystallogr.</i> <b>D55</b> , 656–663 (1999).		
. 415	Zeelen, J. Ph.; Hiltunen, J. K.; Ceska, T. A.; Wierenga, R. K. (1994) Crystallization experiments with 2-enoyl-CoA hydratase, using an automated 'fast-screening' crystallization protocol. Acta Crystallogr. D50 443-447		
	the American Crystallographic Association, Philadelphia, PA.  Brodersen, D. E., Jenner, L. B., Andersen, G. R. and Nyborg, J. (1999). XAct: a program for construction, automated setup and bookkeeping of crystallization experiments. J. Appl. Crystallogr. 32: 1012-16		
	Weber, P.C., Cox, M.J. Experiments with automated protein crystal growth. (1987) p.28 Annual Meeting of		
	Swartzendruber, J.K., Jones, N.D. APOCALYPSE: an automated protein crystallization system. III. In the beginning: The genesis of software. (1988) p.81 Annual Meeting of the American Crystallographic Association, Philadelphia, PA.		
	Morris, D.W., Kim, C.Y., McPherson, A. Automation of protein crystallization trials: use of a robot to deliver reagents to a novel multi-chamber vapor diffusion plate. Biotechniques (1989) 7:522-527.		
· · · · · · · · · · · · · · · · · · ·	Andersen, G.R., Nyborg, J. A spreadsheet approach to automated protein crystallization. J Appl Cryst (1996) 29:236-240.		
	Oldfield, T.J., Ceska, T.A., Br Cryst (1991) 24:255-260.	ady, R.L. A flexible approach to a	utomated protein crystallization. J Appl
	Kelders, H.A., et al.: Automat Protein Eng (1987), 1: 301-3.	ed protein crystallization and a nev	v crystal form of a subtilisin:eglin complex
	Rubin, B., Talafous, J., Larse (1991) 110:156-163	on, D.: Minimal intervention robo	tic protein crystallization. J. Cryst Growt
	Evans, P.R., G.W. Farrants, as phosphofructokinase at 7 A re	nd M.C. Lawrence: Crystallograph solution. J Mol Biol (1986), 191: 7	ic structure of allosterically inhibited 13-720.
	Rawas, A., et al.: Preliminary 214.	crystallographic studies on duck of	ovotransferrin. J Mol Biol (1989), 208: 213
1	OTHER DOCUMENTS (	Including Author, Title, Date, Pe	ertinent Pages, Etc.)
	F 10-1449	FILING DATE 12/21/01	GROUP Unassigned
PTO-1449		APPLICANT Santasiero et al.	
INFORMATION DISCLOSURE CITATION		ATTY. DOCKET NO. 22700-730	SERIAL NO. Not Yet Assigned

			SHEET OUT
INFORMATION DISCLOSURE CITATION PTO-1449		ATTY. DOCKET NO.	SERIAL NO.
		22700-730	Not Yet Assigned
		APPLICANT Santasiero et al.	
11	0 144)	FILING DATE 12/21/01 GROUP Unassigned	
	OTHER DOCUMENTS (	Including Author, Title, Date, P	ertinent Pages, Etc.)
			VVD Technology Magazine (Online), May
		lization: Theory and Practice", St. ty, Houston, TX, (Online) (1995),	ructure and Dynamics of E. Coli Adenylate 13 pages.
E	xperimental Techniques, Vol	l. 41, No. 2 (1998), pp. 157-161.	h from Solution", Instruments and
m	icrogravity environment", Ja	ournal of Crystal Growth, Vol. 122	sion apparatus for protein crystal growth in a 2 (1992), pp. 95-101.
G	onzalez, F. et al., "Crocodile <i>cta Astronautica</i> , Vol. 25, No	: An Automated Apparatus For O o. 12 (1991), pp. 775-784.	organic Crystal Growth From Solution",
B <i>oj</i>	eckmann, W. et al., "The Eff f Crystal Growth, Vol. 99 (19	Fect Of Additives on Nucleation: Apple 1990), pp. 1061-1064.	A Low Cost Automated Apparatus", Journal
In	Leonidas, D. et al., "Refined Crystal Structures of Native Human Angiogenin and Two Active Site Variants: Implications for the Unique Functional Properties of an Enzyme Involved in Neovascularisation During Tumour Growth", J. Mol. Biol., Vol. 285 (1999), pp. 1209-1233.		
C 36	ox, M. J. et al., "Experiments 66-373.	s with Automated Protein Crystall	ization", J. Appl. Cryst., Vol. 20 (1987), pp.
V	isual Inspection", Journal of	Crystal Growth, Vol. 90 (1988), p	sing Laboratory Robotics and Automated op. 325-339.
V	ol. 26 (1993), pp. 558-562.		rop Protein Crystallization", J. Appl. Cryst.,
			52, No. 1, January 1, 1990, pp. 29A-34A.
(1	990), 4 pages.		ement), Douglas Instruments Ltd., London,
de Re	Stevens, R.C. et al., Research Proposal for development and testing of a system of robotics workstations dedicated to protein crystallization. E.O. Lawrence Berkeley National Laboratory and The Scripps Research Institute, pp. 2, 29-52 (Rev. May 1995).		
ht	Sali, A., "100,000 protein structures for the biologist", printed April 1, 1999 from world wide web site http://guitar.rockefeller.edu/avalon/review/avalon.html, 7 pages.		
"F	"Functional Genomics", printed April 1, 1999 from world wide web site http://www.bmb.psu.edu/simpson/16genome/Function.htm, 1 page.		
G: Cc sit	Gaasterland, T., "The Role of Computational Biology In High-Throughput Structure Determination: Computation Before, During, and After Structural Genomics", printed April 1, 1999 from world wide web site http://www-fq.mcs.anl.gov/~gaasterland/sg-review-slides.html, 14 pages.		
"C pg		ls", Vol. 9, No. 1 (1999), Hampton	Research Corp., Laguna Niguel, CA., 63
XAMINER		DATE CONSIDERED	
-MAININE		DATE CONSIDERED	<del></del>